

**ABSTRACT**

A turbine vane for a turbine engine having a cooling system in inner aspects of the turbine vane. The cooling system includes one or more vortex forming chambers proximate to the intersection of an airfoil forming a portion of the turbine vane and an endwall to which the airfoil is attached. The intersection of the airfoil and the endwall may include a fillet for additional strength at the connection. The vortex forming chambers receive cooling fluids from cooling injection holes that provide a cooling fluid supply pathway between the cooling air supply cavity and the vortex forming chambers. The cooling fluids may be exhausted through one or more film cooling holes. The film cooling holes may exhaust cooling fluids proximate to the fillet to reduce the temperature of the external surface of the fillet and surrounding region.